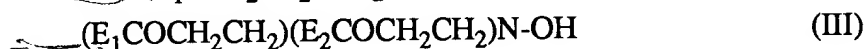
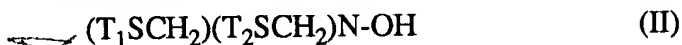


WHAT IS CLAIMED IS:

~~I.~~ A composition having reduced loss of brightness and enhanced resistance to yellowing which comprises

(a) a pulp or paper, and

(b) an effective stabilizing amount of an N,N-dialkylhydroxylamine, an ester, amide or thio substituted N,N-dialkylhydroxylamine or N,N-dibenzylhydroxylamine of formula I, II or III



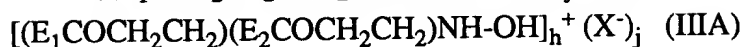
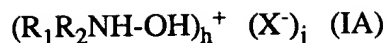
where

R₁ and R₂ are independently alkyl of 1 to 18 carbon atoms, alkyl of 1 to 18 carbon atoms substituted by a hydroxyl group; or benzyl;

T₁ and T₂ are independently alkyl of 1 to 4 carbon atoms, phenyl, 3,5-di-tert-butyl-4-hydroxyphenyl, benzyl or -CH₂COOH;

E₁ and E₂ are independently -OE₃, -NHE₃ or -NE₃E₄ where E₃ and E₄ are independently hydrogen, alkyl of 1 to 4 carbon atoms or said alkyl substituted by one hydroxyl group; or

of an acid salt of formula IA, IIA or IIIA



where

R_1 , R_2 , T_1 , T_2 , E_1 and E_2 are as defined above,

X is an inorganic or organic anion, and

the total charge of cations h is equal to the total charge of anions j.

2. A composition according to claim 1 wherein component (a) is a pulp or paper which still contains lignin.

3. A composition according to claim 1 where in the formula IA, IIA or IIIA, X is phosphate, phosphonate, carbonate, bicarbonate, nitrate, chloride, bromide, bisulfite, sulfite, bisulfate, sulfate, borate, formate, acetate, benzoate, citrate, oxalate, tartrate, acrylate, polyacrylate, fumarate, maleate, itaconate, glycolate, gluconate, malate, mandelate, tiglate, ascorbate, polymethacrylate, a carboxylate of nitrilotriacetic acid, hydroxyethylethylenediaminetriacetic acid, ethylenediaminetetraacetic acid or of diethylenetriaminepentaacetic acid, a diethylenediaminetetraacetic acid or of diethylenetriaminepentaacetic acid, an alkylsulfonate or an arylsulfonate.

4. A composition according to claim 1 wherein the hydroxylamine of formula I, II or III is N,N-dimethylhydroxylamine, N,N-diethylhydroxylamine, N,N-bis(2-hydroxypropyl)hydroxylamine, N,N-bis(3-hydroxypropyl)hydroxylamine, N,N-dioctadecylhydroxylamine, the N,N-dialkylhydroxylamine product made by the direct oxidation of N,N-di(hydrogenated tallow)amine, N,N-dibenzylhydroxylamine, N,N-bis(2-carboxyethyl)hydroxylamine or N,N-bis(benzylthiomethyl)hydroxylamine.

5. A composition according to claim 4 wherein the hydroxylamine is N,N-diethyl-
hydroxylamine, N,N-bis(2-hydroxypropyl)hydroxylamine, N,N-bis(3-hydroxypropyl)-
hydroxylamine or N,N-dibenzylhydroxylamine.

6. A composition according to claim 1 wherein the hydroxylamine is N,N-diethyl-
hydroxylamine or its citrate salt.

7. A composition according to claim 1 which additionally includes an effective
stabilizing amount of at least one stabilizer selected from the group consisting of the UV
absorbers, the polymeric inhibitors, the sulfur containing inhibitors, the phosphorus
containing compounds, the nitrones, the benzofuran-2-ones, fluorescent whitening agents,
hindered amine hydroxylamines and salts thereof, hindered amine nitroxides and salts
thereof, hindered amines and salts thereof and metal chelating agents.

8. A composition according to claim 7 wherein the additional stabilizer is a UV
absorber.

9. A composition according to claim 8 wherein the UV absorber is selected from
group consisting of the benzotriazoles, the s-triazines, the benzophenones, the
 α -cyanoacrylates, the oxanilides, the benzoxazinones, the benzoates and the α -alkyl
cinnamates.

10. A composition according to claim 8 wherein the UV absorber is a
benzotriazole, an s-triazine or a benzophenone.

11. A composition according to claim 10 wherein the UV absorber is 3-(2H-benzo-
triazol-2-yl)-4-hydroxy-5-sec-butylbenzene sulfonic acid, sodium salt (CIBAFast® W). *

12. A composition according to claim 7 wherein the additional stabilizer is a
polymeric inhibitor.

13. A composition according to claim 12 wherein the polymeric inhibitor is poly(ethylene glycol), poly(propylene glycol), poly(butylene glycol) or poly(vinyl pyrrolidone).

14. A composition according to claim 7 wherein the additional stabilizer is a sulfur containing inhibitor.

15. A composition according to claim 14 wherein the sulfur containing inhibitor is polyethylene glycol dithiolacetate, polypropylene glycol dithiolacetate, polybutylene glycol dithioacetate, 1-thioglycerol, 2-mercaptoethyl ether, 2,2'-thiodiethanol, 2,2'-dithiodiethanol, 2,2'-oxydiethanethiol, ethylene glycol bithioglycolate, 3-mercapto-1,2-propanediol, 2-(2-methoxyethoxy)-ethanethiol, glycol dimercaptoacetate, 3,3'-dithiopropionic acid, polyethylene glycol dithiol, polypropylene glycol dithiol, polybutylene glycol dithiol or ethylene glycol bis(mercaptoacetate).

16. A composition according to claim 7 wherein the additional stabilizer is a phosphorus containing compound.

17. A composition according to claim 16 wherein the phosphorus containing compound is tris(2,4-di-tert-butylphenyl) phosphite, 2,2',2''-nitrilo[triethyl-tris(3,3',5,5'-tetra-tert-butyl-1,1'-biphenyl-2,2'-diyl) phosphite], tris(2,4-di-tert-butyl-6-ethylphenyl) phosphite, sodium hydroxymethyl phosphinate, tetrakis(2,4-di-butylphenyl) 4,4'-biphenylenediphosphonite, tris(nonylphenyl) phosphite, bis(2,4-di-tert-butylphenyl) pentaerythrityl diphosphite, 2,2'-ethylidenebis(2,4-di-tert-butylphenyl) fluorophosphite or 2-butyl-2-ethylpropan-1,3-diyl 2,4,6-tri-tert-butylphenyl phosphite.

18. A composition according to claim 7 wherein the additional stabilizer is a mixture of a UV absorber and polymeric inhibitor.

19. A composition according to claim 7 wherein the additional stabilizer is a

mixture of a UV absorber and a sulfur containing compound.

20. A composition according to claim 7 wherein the additional stabilizer is a mixture of a UV absorber and a phosphorus containing compound.

21. A composition according to claim 7 wherein the additional stabilizer is a mixture of a UV absorber and a metal chelating agent.

22. A composition according to claim 7 wherein the additional stabilizer is a mixture of a polymeric inhibitor and a sulfur containing compound.

23. A composition according to claim 7 wherein the additional stabilizer is a mixture of a polymeric inhibitor and a phosphorus containing compound.

24. A composition according to claim 7 wherein the additional stabilizer is a mixture of a sulfur containing compound and a phosphorus containing compound.

25. A composition according to claim 7 wherein the additional stabilizer is a mixture of a UV absorber, a polymeric inhibitor and a sulfur containing compound.

26. A composition according to claim 7 wherein the additional stabilizer is a mixture of a UV absorber, a polymeric inhibitor and a phosphorus containing compound.

27. A composition according to claim 7 wherein the additional stabilizer is a mixture of a UV absorber, a polymeric inhibitor and a metal chelating agent.

28. A composition according to claim 7 wherein the additional stabilizer is a mixture of a UV absorber, a polymeric inhibitor, a sulfur containing compound and a phosphorus containing compound.

29. A composition according to claim 7 wherein the additional stabilizer is a

mixture of a UV absorber and a hindered amine nitroxide.

30. A composition according to claim 7 wherein the additional stabilizer is a mixture of a UV absorber and a hindered amine hydroxylamine.

31. A composition according to claim 7 wherein the additional stabilizer is a mixture of a UV absorber and a hindered amine hydroxylamine salt.

32. A composition according to claim 7 wherein the additional stabilizer is a mixture of a UV absorber and a hindered amine.

33. A composition according to claim 7 wherein the additional stabilizer is a fluorescent whitening agent.

34. A composition according to claim 33 wherein the fluorescent whitening agent is 2,2'-[(1,1'-diphenyl)-4,4'-diyl-1,2-ethenediyl]bis-benzenesulfonic, disodium salt {or bis[4,4'-(2-stilbenesulfonic acid)], disodium salt} (TINOPAL[®] SK).

35. A composition according to claim 1 wherein the effective stabilizing amount of the hydroxylamine or hydroxylamine salt is 0.001 to 5% by weight based on the pulp or paper.

36. A composition according to claim 1 wherein the effective stabilizing amount of the hydroxylamine is 0.005 to 4% based on the pulp or paper.

37. A composition according to claim 1 wherein the effective stabilizing amount of the hydroxylamine is 0.01 to 4% based on the pulp or paper.

38. A composition according to claim 7 wherein the effective stabilizing amount of a coadditive is 0.001 to 5% by weight based on the pulp or paper.

39. A composition according to claim 7 wherein the effective stabilizing amount of a coadditive is 0.005 to 3% by weight based on the pulp or paper.

40. A composition according to claim 7 wherein the effective stabilizing amount of a coadditive is 0.01 to 2% based on the pulp or paper.

41. A process for preventing the loss of brightness and for enhancing resistance to yellowing of pulp or paper which comprises

treating said pulp or paper with an effective stabilizing amount of a hydroxylamine compound of formula I, II or III or hydroxylamine salt of formula IA, IIA or IIIA according to claim 1.

42. A process according to claim 41 wherein the pulp or paper still contains lignin.

43. A process according to claim 40 wherein the hydroxylamine is N,N-diethylhydroxylamine or its citrate salt.